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WELCOMING REMARKS

Prof. Charbel Farhat
Chair of Aeronautics
& Astronautics

Stanford University



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NIAC Symposium Day 1



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Thank you Stanford & Professor Pavone



A special THANK YOU to Stanford University and especially our host, who helped develop and organize this Symposium:



2011 NIAC Fellow & Professor Marco Pavone

Director, Autonomous Systems Laboratory
Stanford University
Department of Aeronautics and Astronautics



What is **NIAC**?

NASA Innovative Advanced Concepts

NASA Innovative Advanced Concepts

A program to support
early studies of
innovative, yet
credible, visionary
concepts
that could one day
“change the possible”
in aerospace.



NIAC Scope, Awards, & Culture

- NIAC supports early studies of visionary aerospace concepts, which must be:
 - **Aerospace architecture, mission, or system concepts**
 - **Exciting**
 - **Unexplored**
 - **Credible**
- NIAC awards support 2 phases of study to *Change the possible!*
 - **Phase I:** up to \$100K, 9 months
 - **Phase II:** up to \$500K, 2 years
- Inspiration, outreach, and interaction are also key

NIAC Core Program Office



- **Dr. Jay Falker**, Program Executive



- **Mr. Jason Derleth**, Program Manager



- **Dr. Ron Turner**, Senior Science Advisor



- **Ms. Kathy Reilly**, Communications & Outreach Manager

BOAT ROCKERS, REBELS, RISK TAKERS, DEVIATORS, INNOVATORS, CHAMPIONS, OUT OF THE BOX THINKERS...



NIAC FELLOWS
NASA Innovative Advanced Concepts



2012 NIAC Phase II Fellows



2013 NIAC Phase I Fellows

NIAC External Council (NEC)

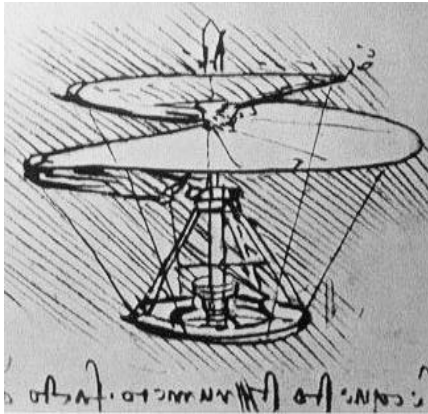
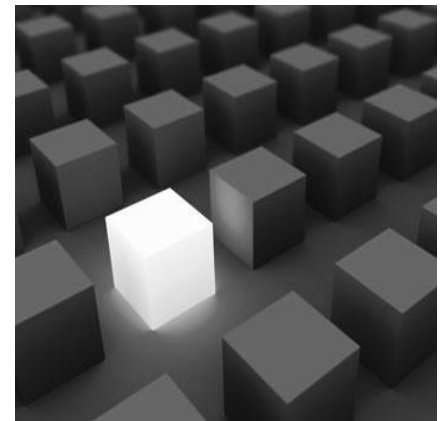
- **Dr. Frank Martin**
President, Martin Consulting; former NASA
- **Dr. Penny Boston**
Prof. of Cave & Karst Science, New Mexico Tech
- **Dr. David Brin**
Scientist, speaker, well-known author, futurist
- **Dr. John Cramer**
Prof. of Physics, Univ. of Washington, and author
- **Dr. Frank Drake**
Astronomer, Astrophysicist, father of SETI
- **Dr. Michael Yarymovych**
Pres., Sarasota Space Assoc.; former USAF Chief Scientist
- **Dr. Laurence Young**
Apollo Prof. of Astronautics & HST, MIT



CREATIVITY



INNOVATION

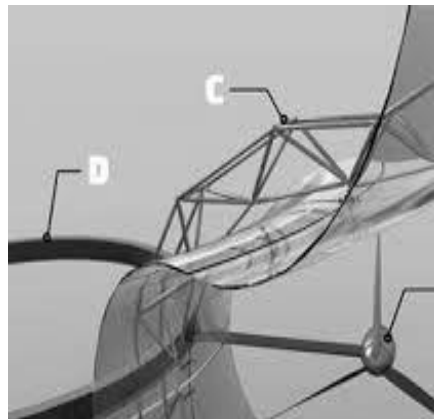


INVENTION

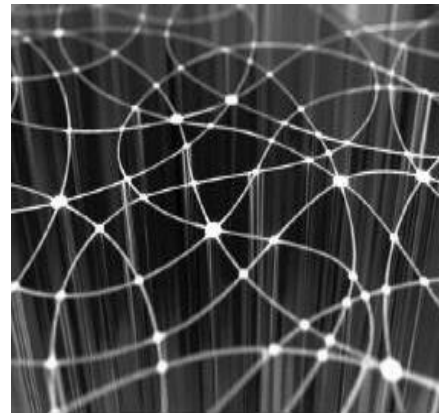


GAME CHANGING

CROSS CUTTING



INTERDISCIPLINARY



NIAC = ART + SCIENCE

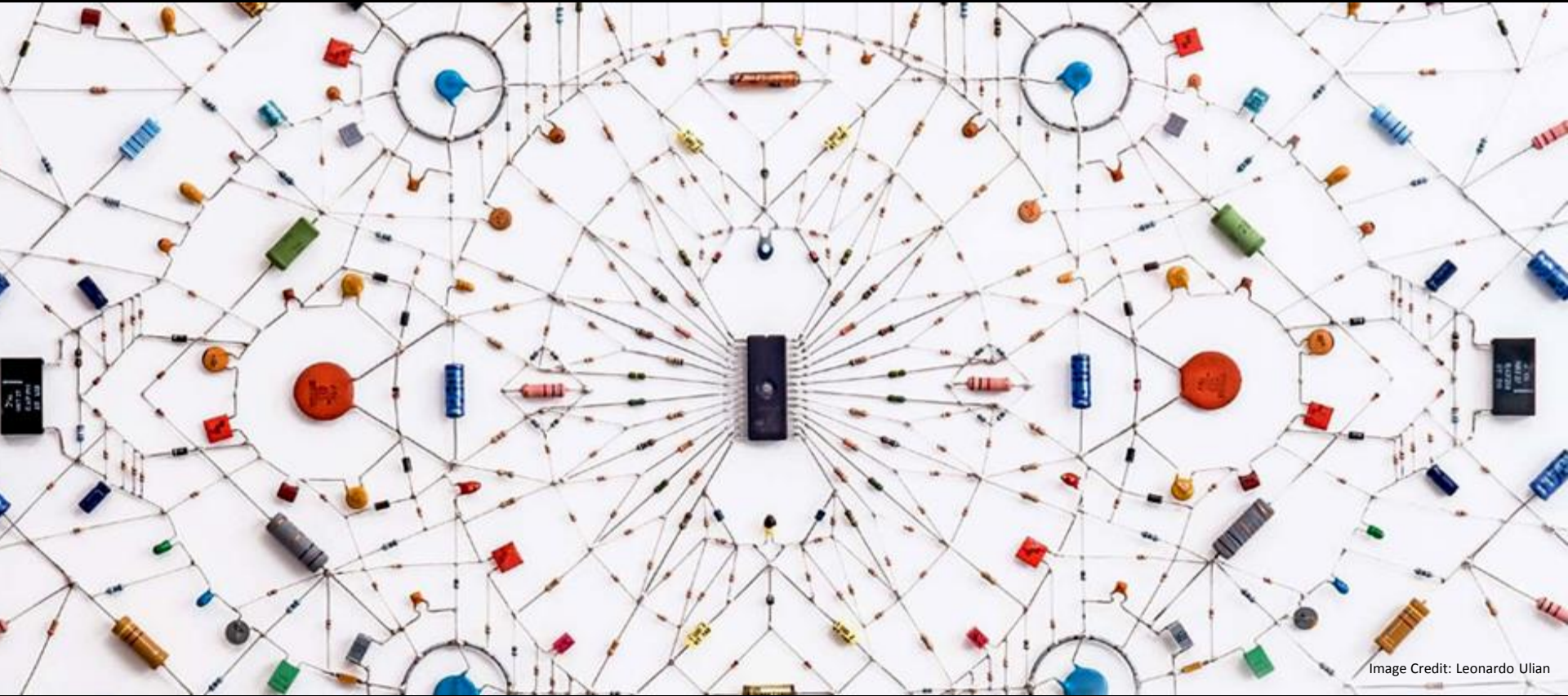


Image Credit: Leonardo Ulian

NIAC is unique. It attracts the artists of science and technology – those captivated by ideas and the never ending pursuit of the possible – the “what if.”

Symposium Outline – Day 1



1

8:30am Commence

- Welcome
- NIAC Introduction
- *Keynote Address: Jamie Hyneman, Host of the Mythbusters*

10:00 – 10:10 Break

- *Special Address: Pete Worden, NASA Ames Center Director*
- Two Phase II Fellow Presentations
- *Special Address: Gary Hudson, Space Studies Institute President*

12:00 – 1:30pm Lunch

- Four Phase I Fellow Presentations

3:30 – 4:00 Break (Stanford Student Poster Session)

- Three Phase II Fellow Presentations

5:30 Adjourn

7:00 – 8:30 SETI Institute: Private Funding Opportunities for Space Research

Symposium



Discussion!



KEYNOTE ADDRESS

JAMIE HYNEMAN

**Host & Executive Producer
of Mythbusters**

**“Innovation, Explosives, and the
Benefit of Adolescent Behavior”**



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SPECIAL ADDRESS

PETE WORDEN

**NIAC Fellow and Center Director,
NASA Ames Research Center**



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Robert Winglee





David Wettergreen





INVITED SPEAKER

GARY HUDSON

The Space Studies Institute

“A Matter of Some Gravity”



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LUNCH



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S.J. Ben Yoo





Christopher Walker

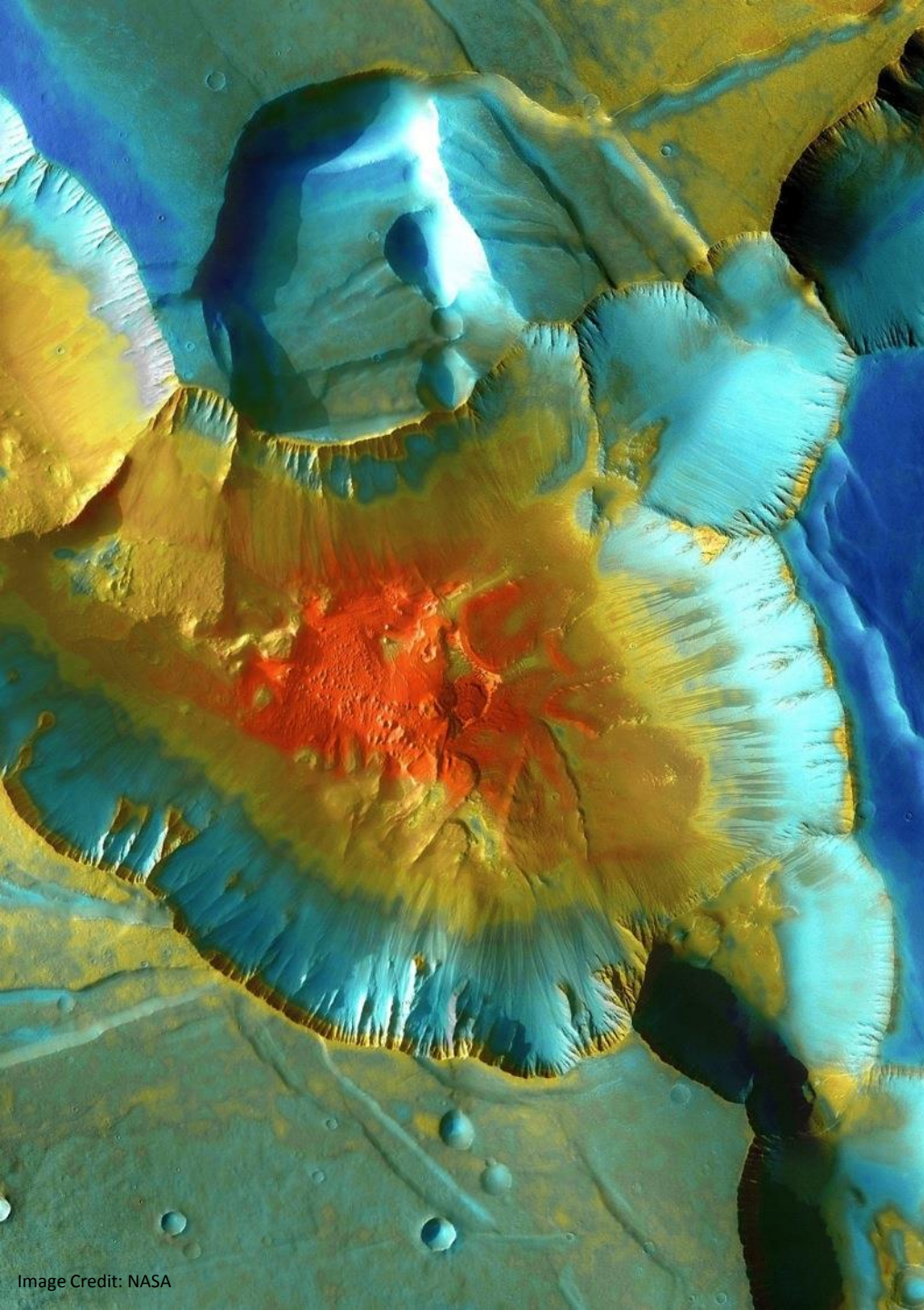


Adrian Stoica



Joshua Rovey





**BREAK
&
POSTER
SESSIONS
with
STANFORD
STUDENTS**



Bong Wie



William Whittaker



Shayne Westover





ADJOURN

- 6:00-7:00PM SETI Institute - NIAC Fellows Tour and Refreshments
- 7:00-8:30PM SETI Institute - Public Special Event:
“Private Funding Opportunities for Space Research”



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NIAC Symposium Day 2



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Symposium Outline – Day 2



1

8:30am Commence

- NIAC Plans & Announcements
- *Keynote Address: Peter Norvig, Google Director of Research*

10:00 – 10:30 Break

- Two Phase II Fellow Presentations

11:30 – 1:00pm Lunch

- Four Phase I Fellow Presentations

3:00 – 3:30 Break (Stanford Student Poster Session)

- Four Phase II Fellow Presentations

5:30 Adjourn

What Opportunities does NIAC Offer?



Phase I Solicitation

Open to everyone (US)
Date: early Oct 2014



Phase II Solicitation

Eligible upon Phase I completion
Date: mid April 2014



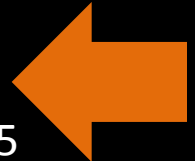
NIAC Annual Symposia

Open to everyone



NEXT NIAC Symposium

Orlando, FL
Date: January 27-29 2015



Open access to presentations/studies at:
www.nasa.gov/niac

The 2015 NIAC SYMPOSIUM will be held in:



ORLANDO, FLORIDA

Target Jan. 27-29



Program Manager Announcements

- SBIR opportunities
- China clarification
- Reporting expectations

Key 2014 Dates: Phase I Solicitation

\$100k, 9 months, open to anyone in US

- Two-Step Solicitation / Response:
 - NRA released Nov 15, 2013 (despite October Shut-Down)
 - Step A white papers due Dec 18, 2013
 - Step B notifications out by Jan 30, 2014 (feedback upon request)
 - Step B Full Proposals Due Mar 3, 2014
- Review Process: March – early May 2014
 - Proposal assignments & individual reviews in March
 - Technical Review Panels complete by late April
 - Integration Panel complete by early May
- HQ Discussion & Decisions: May – early June 2014
 - Consultation for synergy/overlap with other NASA efforts
 - Announcement early June (all proposers receive notification)
- Goal: awards by late-June 2014 (vs. late Aug 2013)
- 2015 Phase I NRA release target: early Oct 2014

Key 2014 Dates: Phase II Solicitation

\$500k, 2 years, open to any NIAC Fellows after Ph.I complete

- One-Step Solicitation / Response: May – July
 - NRA release target mid-April 2014 (vs. late May 2013)
 - Full Proposals due early June (vs. early July 2013)
- Review Process: June – July 2014
 - Proposal assignments & individual reviews in June
 - Technical Review Panel complete by early July
- HQ Discussion & Decisions: late July 2014
 - Consultation for synergy/overlap with other NASA efforts
 - Announcement late July (all proposers receive notification)
- Goal: awards by late Aug 2014 (vs. late Sept 2013)
- *2015 Phase II NRA release target: mid Feb 2015*

Outreach

We encourage communication and sharing

Between Fellows and with NASA, public, press, and other orgs

Your Symposium presentation and Final Report will be **public**

Posted in pdf format on the NIAC website

Sensitive information can be protected (e.g., separate appendix)

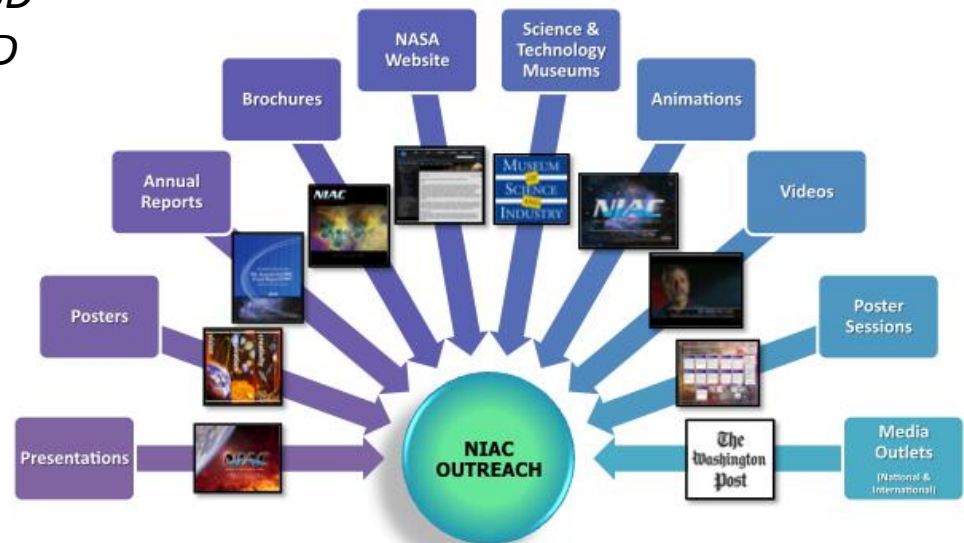
NIAC Education & Public Outreach Initiative:

“From Science Fiction to Science Fact” Fellows’ Lecture Series

Chicago Museum of Science & Industry- April, 2014

Miami Museum of Science- TBD

St. Louis Science Museum- TBD



Publicity

- **Please be sure to credit NASA and NIAC in all articles or products associated with your NIAC studies**
 - Include the logos if possible (downloadable from our website)
 - Mention your NIAC award as funding/contributing to your effort
- **Please notify Kathy Reilly of any publicity activities**
 - Just to be aware (never to interfere)
 - We can help point others to your work
- **You may be contacted by someone offering an article or short radio spot about your NIAC study**
 - Leonard David (journalist for Space.com, Space News, AIAA Aerospace America) is supporting NASA HQ, increasing awareness about STMD projects
 - Harla Sherwood and Scott Bednar with the National Institute of Aerospace will be offering short video interviews and at a later date, the ***Innovation Now*** radio program featuring NIAC studies
 - Steve Heard, ***The Futures Channel***, will be interviewing select Fellows
 - These opportunities are purely optional





KEYNOTE ADDRESS

PETER NORVIG

Director of Research, Google, Inc.

**“Live and Learn: How Big Data and
Machine Learning Power the Internet”**



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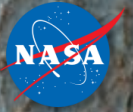
Babak Saif





Vytas SunSpiral





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Lynn Rothschild



Thomas Prettyman



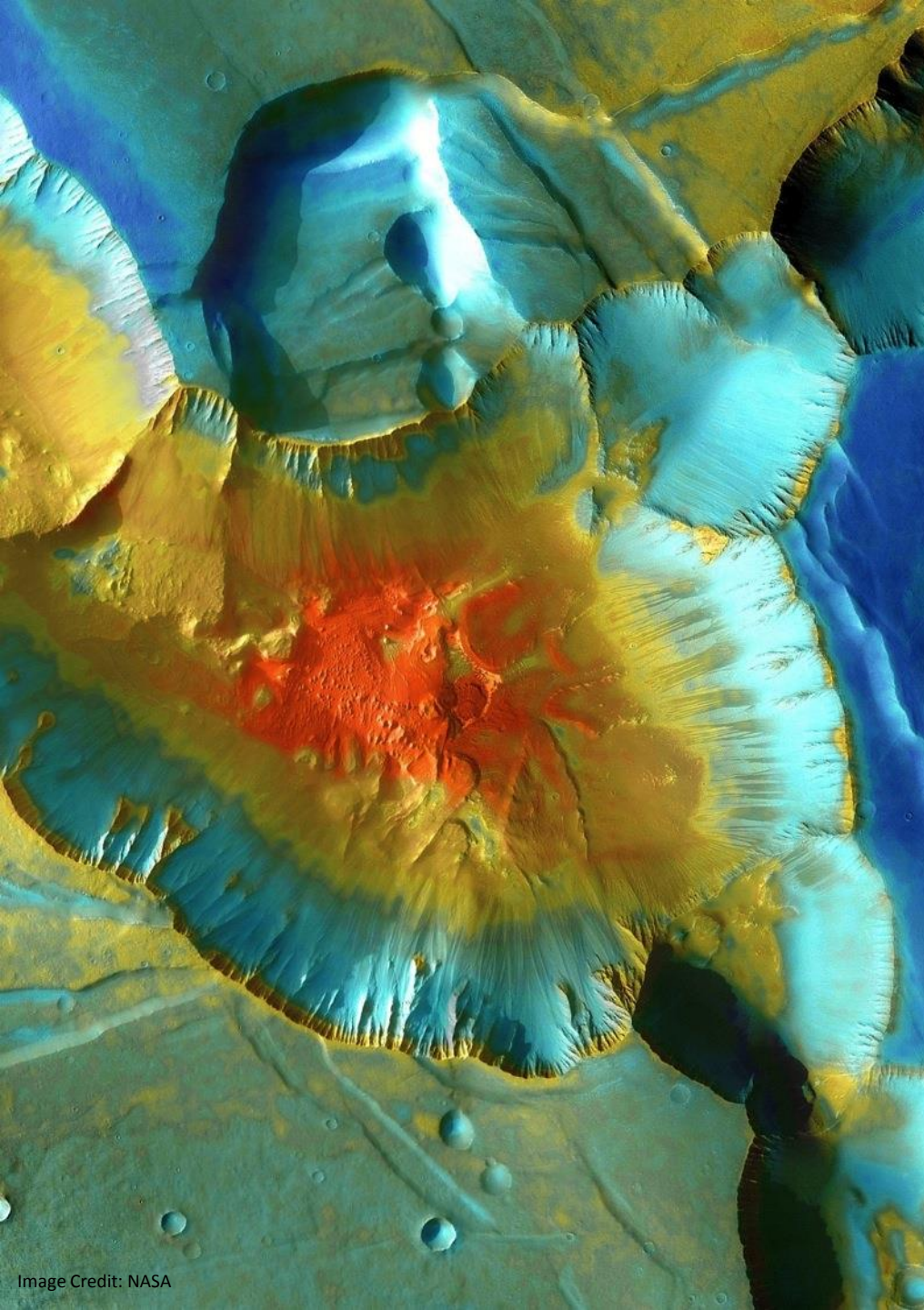


Mark Moore





Anthony Longman



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STUDENTS**



Dmitry Strekalov





John Slough





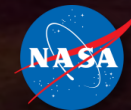
Kendra Short





Joe Ritter





ADJOURN



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NASA Innovative Advanced Concepts - Space Technology Mission Directorate
NASA Headquarters – Washington, DC



NIAC Symposium Day 3



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Symposium Outline – Day 3



1

8:30am Commence

- NIAC Context in STMD
- *Special Address: James Reuther, STMD Deputy AA for Programs*
- NIAC Phase II Q&A
- *Keynote Address: Seth Shostak, SETI Institute*

10:00 – 10:30 Break

- Two Phase II Fellow Presentations

11:30 – 1:00pm Lunch

- Four Phase I Fellow Presentations

3:00 – 3:30 Break (Stanford Student Poster Session)

- Three Phase II Fellow Presentations
- Concluding Remarks

5:00 Adjourn – Symposium Complete



NIAC Context: Space Technology Mission Directorate (STMD)

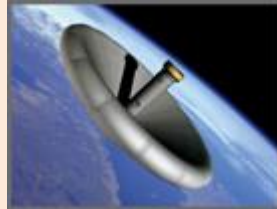


Space Tech Portfolio

Space Technology Mission Directorate (STMD) Programs



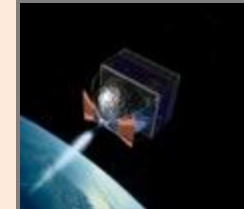
Transformative &
Crosscutting
Technology
Breakthroughs



**Game Changing
Development (GCD)**



**Technology
Demonstration
Missions (TDM)**



**Small Spacecraft
Technologies (SSTP)**

Pioneering
Concepts/
Developing
Innovation
Community



**Space Technology
Research Grant (STRG)**



**NASA Innovative
Advanced Concepts
(NIAC)**



**Center Innovation
Fund (CIF)**

Creating Markets &
Growing Innovation
Economy



Centennial Challenges



**Small Business Innovation
Research & Small Business
Technology Transfer (SBIR/STTR)**



**Flight Opportunities
Program**



SPECIAL ADDRESS

JAMES REUTHER

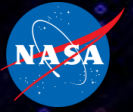
**STMD Deputy AA for Programs
NASA Headquarters**



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NIAC Awards, Scope, Criteria

- NIAC awards support 2 phases of study:
 - **Phase I** (\$100K, 9 months): concept definition and initial analysis in a mission context – *What? How? Feasibility? Benefit? End the giggle factor.*
 - **Phase II** (\$500K, 2 years): further devt of most promising Ph.I's – *Address key unknowns, assumptions, risks, paths forward; to ready for serious tech/project devt. (Note: Ph.II is not for "go-do" engineering or most h/w demo)*
- Scope of NIAC Phase I Studies:
 - **Aerospace architecture, mission, or system concepts**
 - **Exciting**: offering a potential breakthrough or revolutionary improvement
 - **Unexplored**: novel, with basic feasibility and properties unclear
 - **Credible**: sound scientific/engineering basis and plausible implementation
- NIAC proposal evaluation criteria:
 - **Potential of the Concept**: potential benefit if realistically successful
 - **Strength of the Approach**: research objectives, key issues, team
 - **Benefits of the Study**: concept definition, mission analysis, wider benefits, scientific/engineering contributions, notably new/different/inspiring



Brief Q&A about Phase II or Other Topics?



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KEYNOTE ADDRESS

SETH SHOSTAK

Senior Astronomer, SETI Institute

**“Finding Cosmic Company:
A Transformative Event of the 21st Century”**



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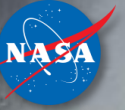


Robert Hoyt



Young K. Bae





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Image Credit: NASA



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Nathan Jerred





Hamid Hemmati





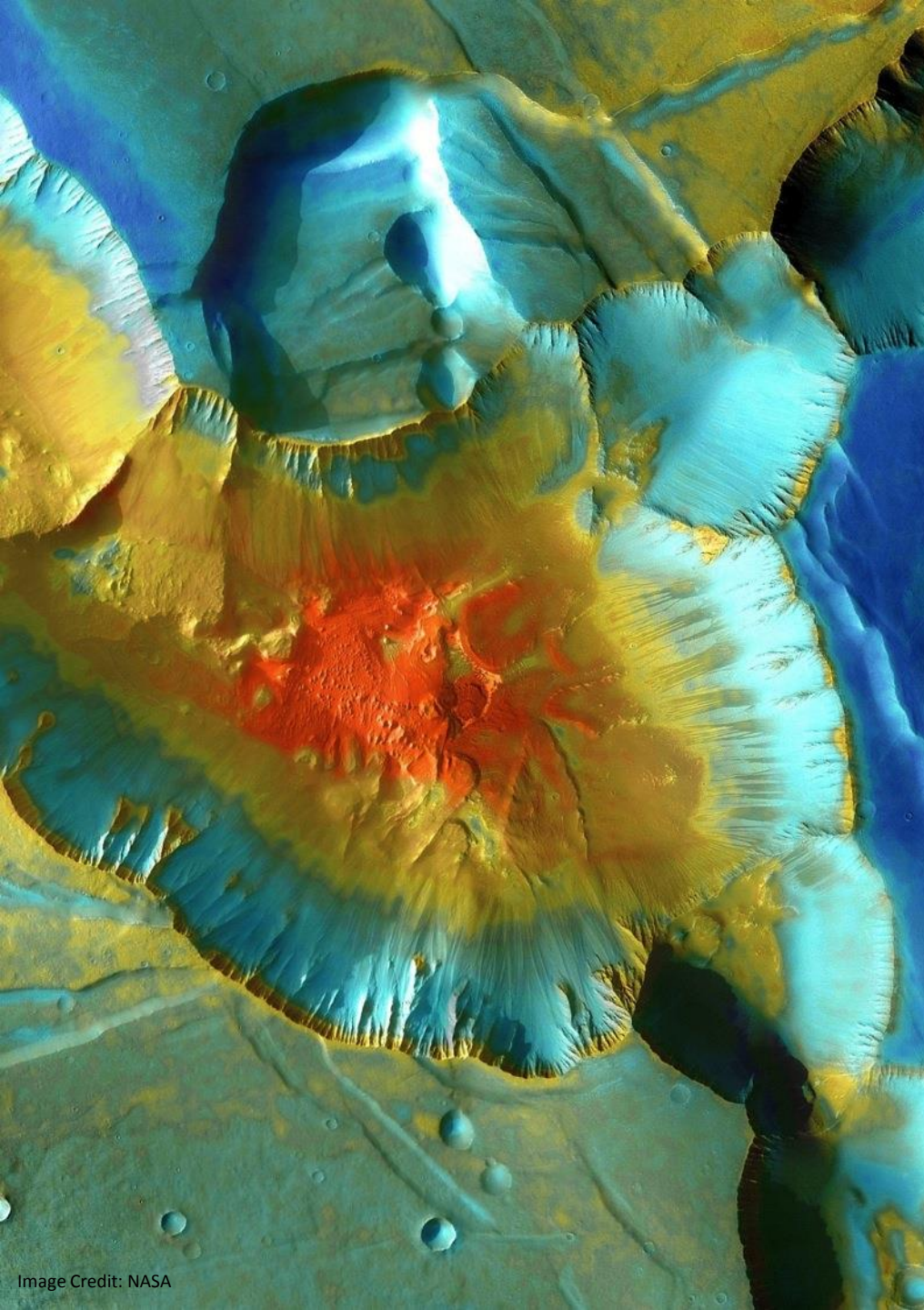
John Bradford





Rob Adams





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STANFORD
STUDENTS**



David Miller





Berok Khoshnevis





Kevin Duda





WRAP-UP ADJOURN



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